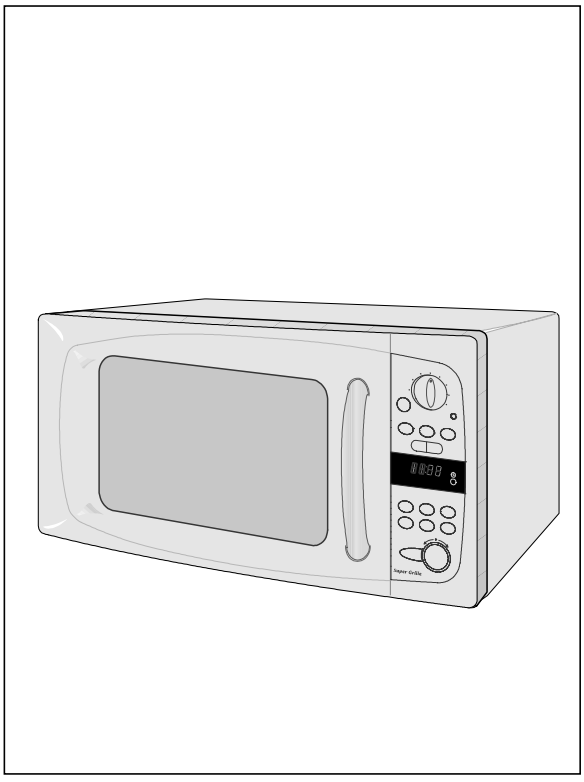
SAMSUNG

SUPER GRILLE MICROWAVE OVEN

PG117 (SILVER)

SERVICE Manual

MICROWAVE OVEN



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PRECAUTIONS TO BE OBSERVED BEFORE AND DURING SERVICING TO AVOID POSSIBLE EXPOSURE TO EXCESSIVE MICROWAVE ENERGY

(a) Do not operate or allow the oven to be operated with the door open.

(b) Make the following safety checks on all ovens to be serviced before activating the magnetron or other microwave source, and make repairs as necessary:
   (1) Interlock operation,
   (2) proper door closing,
   (3) seal and sealing surfaces (arcing, wear, and other damage),
   (4) damage to or loosening of hinges and latches,
   (5) evidence of dropping or abuse.

(c) Before turning on microwave power for any service test or inspection within the microwave generating compartments, check the magnetron, wave guide or transmission line, and cavity for proper alignment, integrity, and connections.

(d) Any defective or misadjusted components in the interlock, monitor, door seal, and microwave generation and transmission systems shall be repaired, replaced, or adjusted by procedures described in this manual before the oven is released to the owner.

(e) A Microwave leakage check to verify compliance with the Federal performance standard should be performed on each oven prior to release to the owner.

1. Precaution

Follow these special safety precautions. Although the microwave oven is completely safe during ordinary use, repair work can be extremely hazardous due to possible exposure to microwave radiation, as well as potentially lethal high voltages and currents.

1-1 Safety precautions (⚠)

1. All repairs should be done in accordance with the procedures described in this manual. This product complies with Federal Performance Standard 21 CFR Subchapter J(DHHS).

2. Microwave emission check should be performed to prior to servicing if the oven is operative.

3. If the oven operates with the door open : Instruct the user not to operate the oven and contact the manufacturer and the center for devices and radiological health immediately.

4. Notify the Central Service Center if the microwave leakage exceeds 5 mW/cm^2.

5. Check all grounds.

6. Do not power the MWO from a "2-prong" AC cord. Be sure that all of the built-in protective devices are replaced. Restore any missing protective shields.

7. When reinstalling the chassis and its assemblies, be sure to restore all protective devices, including: nonmetallic control knobs and compartment covers.

8. Make sure that there are no cabinet openings through which people --particularly children --might insert objects and contact dangerous voltages. Examples: Lamp hole, ventilation slots.

9. Inform the manufacturer of any oven found to have emission in excess of 5 mW/cm^2 , Make repairs to bring the unit into compliance at no cost to owner and try to determine cause.
   Instruct owner not to use oven until it has been brought into compliance.

CENTRAL SERVICE CENTER

10. Service technicians should remove their watches while repairing an MWO.

11. To avoid any possible radiation hazard, replace parts in accordance with the wiring diagram. Also, use only the exact replacements for the following parts:
    Primary and secondary interlock switches, interlock monitor switch.

12. If the fuse is blown by the Interlock Monitor Switch: Replace all of the following at the same time: Primary, door sensing switch and power relay, as well as the Interlock Monitor Switch. The correct adjustment of these switches is described elsewhere in this manual. Make sure that the fuse has the correct rating for the particular model being repaired.

13. Design Alteration Warning:
    Use exact replacement parts only, i.e., only those that are specified in the drawings and parts lists of this manual. This is especially important for the Interlock switches, described above. Never alter or add to the mechanical or electrical design of the MWO. Any design changes or additions will void the manufacturer's warranty. Always unplug the unit's AC power cord from the AC power source before attempting to remove or reinstall any component or assembly.

14. Never defeat any of the B+ voltage interlocks. Do not apply AC power to the unit (or any of its assemblies) unless all solid-state heat sinks are correctly installed.

15. Some semiconductor ("solid state") devices are easily damaged by static electricity. Such components are called Electrostatically Sensitive Devices (ESDs). Examples include integrated circuits and field-effect transistors. Immediately before handling any semiconductor components or assemblies, drain the electrostatic charge from your body by touching a known earth ground.

16. Always connect a test instrument's ground lead to the instrument chassis ground before connecting the positive lead; always remove the instrument's ground lead last.

1-2 Special Servicing Precautions (Continued)

17. When checking the continuity of the witches or transformer, always make sure that the power is OFF, and one of the lead wires is disconnected.

18. Components that are critical for safety are indicated in the circuit diagram by shading, ⚠ or .⚠

19. Use replacement components that have the same ratings, especially for flame resistance and dielectric strength specifications. A replacement part that does not have the same safety characteristics as the original might create shock, fire or other hazards.

1-3 Special High Voltage Precautions

1. High Voltage Warning
   Do not attempt to measure any of the high voltages --this includes the filament voltage of the magnetron. High voltage is present during any cook cycle.
   Before touching any components or wiring, always unplug the oven and discharge the high voltage capacitor (See Figure 1-1)

2. The high-voltage capacitor remains charged about 30 seconds after disconnection. Short the negative terminal of the high-voltage capacitor to to the oven chassis. (Use a screwdriver.)

3. High voltage is maintained within specified limits by close-tolerance, safety-related components and adjustments. If the high voltage exceeds the specified limits, check each of the special components.

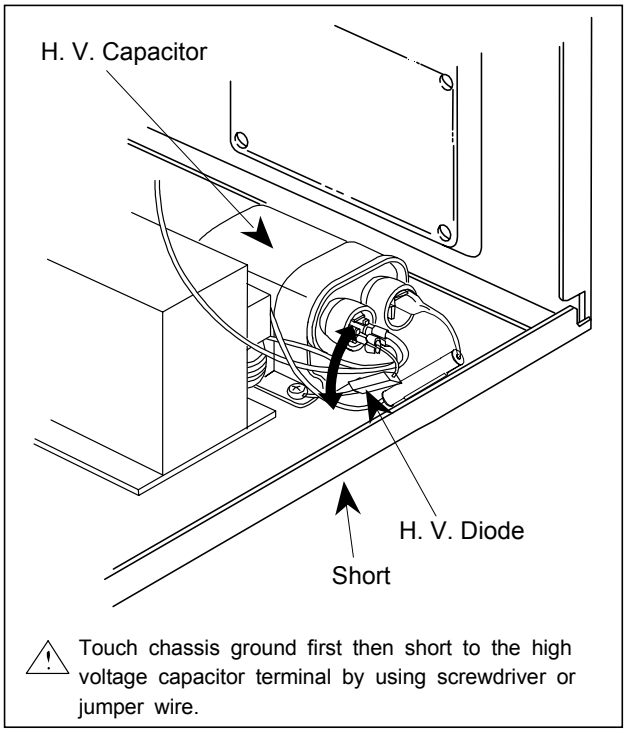


Fig. 1-1 Discharging High Voltage Capacitor

PRECAUTION

There exists HIGH VOLTAGE ELECTRICITY with high current capabilities in the circuits of the HIGH VOLTAGE TRANSFORMER secondary and filament terminals. It is extremely dangerous to work on or near these circuits with the oven energized.
DO NOT measure the voltage in the high voltage circuit including filament voltage of magnetron.

PRECAUTION

Never touch any circuit wiring with your hand nor with uninsulated tool during operation.

PRECAUTION

Servicemen should remove their watches whenever working close to or replacing the magnetron.

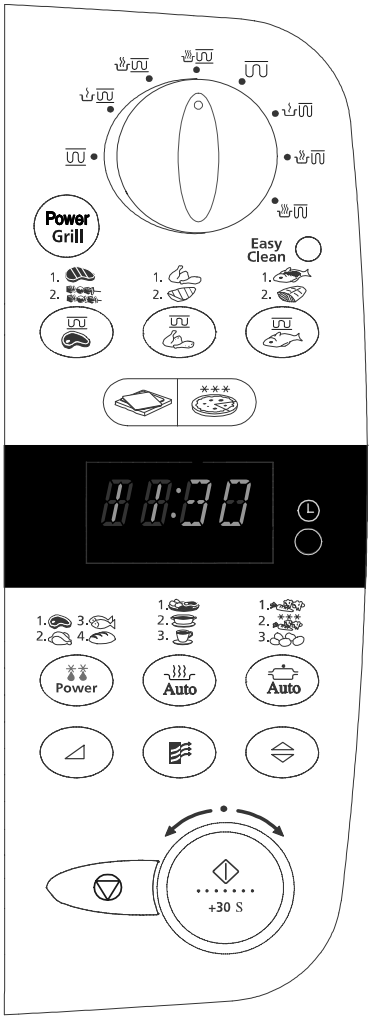
2. Specifications

2-1 Table of Specifications

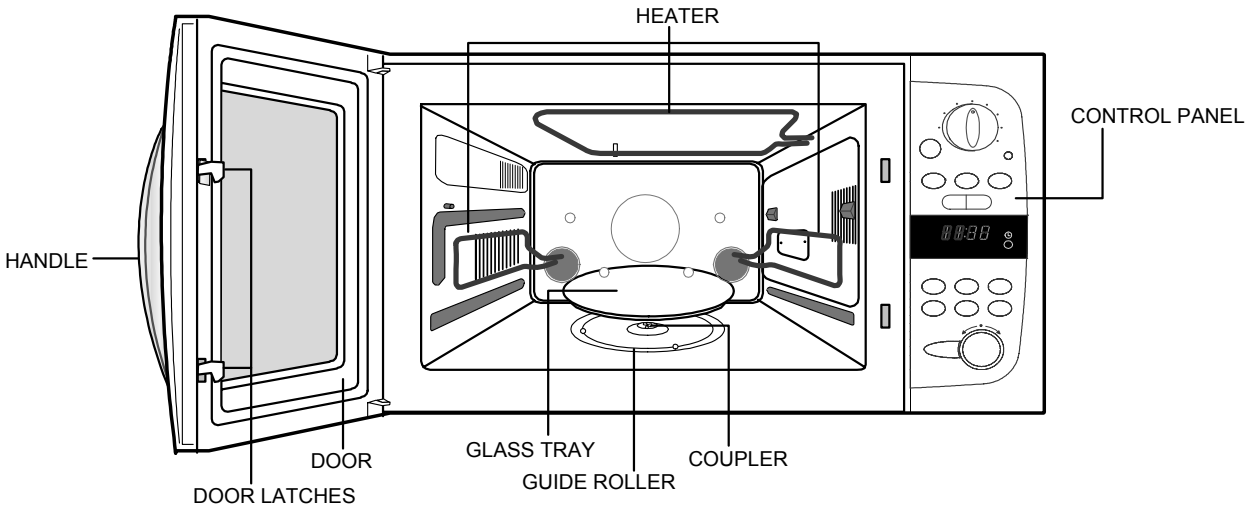
TIMER	MICROWAVE : 99 MINUTES 90 SECONDS
	GRILL : 60 MINUTES
POWER SOURCE	220V 50Hz, AC
POWER CONSUMPTION	MICROWAVE : 1,400W
	SUPER GRILL : 1,850W
OUTPUT POWER	FROM 180 TO 900W
	(IEC-705 TEST PROCEDURE)
OPERATING FREQUENCY	2,450MHz
MAGNETRON	OM75P(31)ESS
COOLING METHOD	COOLING FAN MOTOR
OUTSIDE DIMENSIONS	529mm(W) x 350mm(H) x 507mm(D)
OVEN DIMENSIONS	344mm(W) x 240mm(H) x 345mm(D)
SHIPPING DIMENSIONS	611mm(W) x 435mm(H) x 541mm(D)
SHIPPING WEIGHT APPROX.	NET 21 kg
	GROSS 21 kg

3. Operating Instructions

3-1 Control Panel



3-2 Features



4. Disassembly and Reassembly

4-1 Replacement of Magnetron, Fan Motor Assembly

Remove the magnetron including the shield case, permanent magnet, choke coils and capacitors (all of which are contained in one assembly).

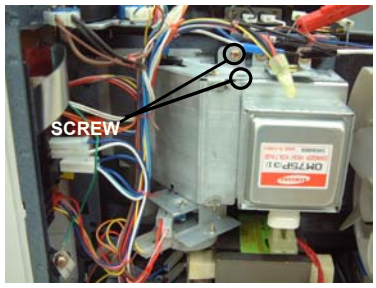
1. Disconnect all lead wires from the magnetron and lamp.
2. Remove a screw securing Damper Assembly.
3. Remove the Damper Assembly.
4. Remove screws securing the magnetron to the wave guide.
5. Take out the magnetron very carefully.
6. Remove nuts from the back panel.

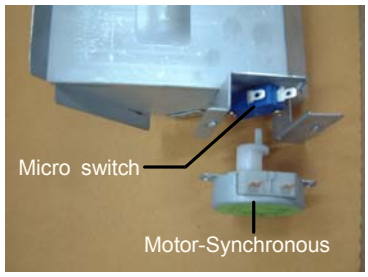
NOTE1: When removing the magnetron, make sure that its antenna does not hit any adjacent parts, or it may be damaged.

NOTE2: When replacing the magnetron, be sure to remount the magnetron gasket in the correct position and make sure the gasket is in good condition.

4-2 Replacement of Damper Assembly

1. Disconnect wires from the Damper Assembly. (Lamp, Motor and Micro switch)
2. Remove screws securing the Damper Assembly to the cavity.
3. Remove the Lamp.
4. Remove the Damper Motor and cam motor.
5. Remove screws securing the micro-switch.
6. Remove the micro-switch.





4-3 Replacement of High Voltage Transformer

1. Discharge the high voltage capacitor.
2. Disconnect all the leads.
3. Remove the mounting bolts.
4. Reconnect the leads correctly and firmly.

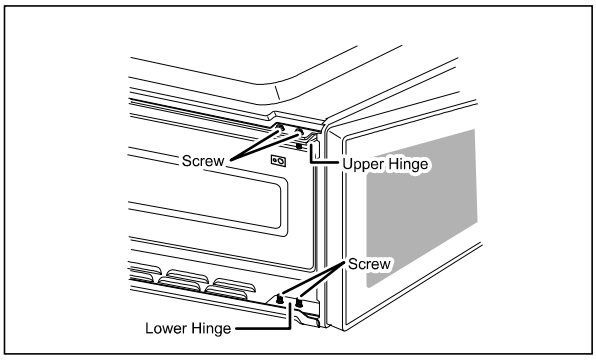
PRECAUTION
Servicemen should remove their watches whenever working close to or replacing the magnetron.

PRECAUTION
There exists HIGH VOLTAGE ELECTRICITY with high current capabilities in the circuits of the HIGH VOLTAGE TRANSFORMER secondary and filament terminals. It is extremely dangerous to work on or near these circuits with the oven energized.
DO NOT measure the voltage in the high voltage circuit including filament voltage of magnetron.

4-3 Replacement of Door Assembly

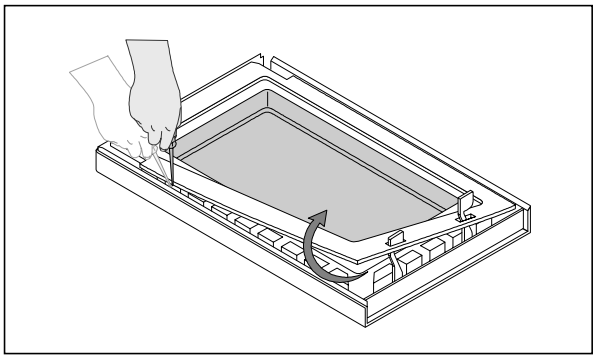
4-3-1 Removal of Door Assembly

Remove hex bolts securing the upper hinge and lower hinge. Then remove the door assembly.



4-3-2 Removal of Door "C"

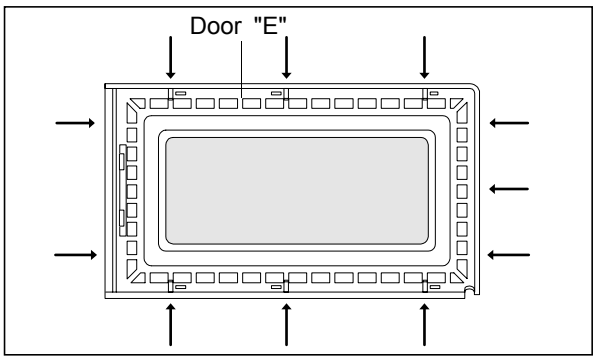
Insert flat screwdriver into the gap between Door "A" and Door "C" to remove Door "C". Be careful when handling Door "C" because it is fragile. Then remove the door assembly.



4-3-2 Removal of Door "E"

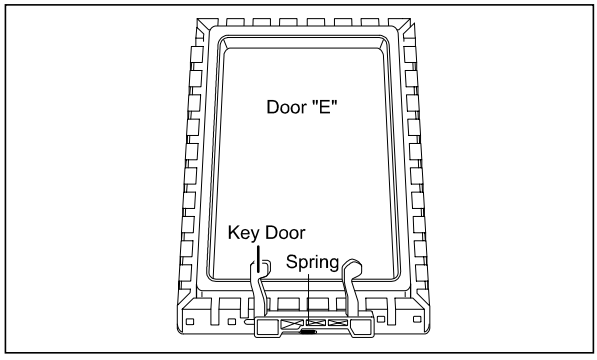
Following the procedure as shown in the figure, insert and bend a thin metal plate between Door "E" and Door "A" until you hear the 'tick' sound.

- Insertion depth of the thin metal plate should be 0.5mm or less.



4-3-3 Removal of Key Door & Spring

Remove pin hinge from Door "E"
Detach spring from Door "E" and key door.



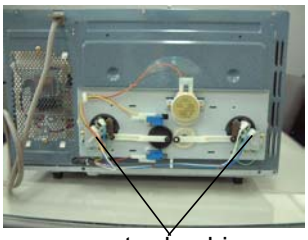
4-3-4 Reassembly of Test

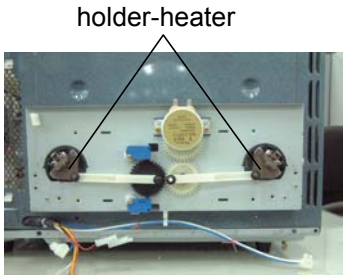
After replacement of the defective component parts of the door, reassemble it and follow the instructions below for proper installation and adjustment so as to prevent an excessive microwave leakage.

1. When mounting the door to the oven, be sure to adjust the door parallel to the bottom line of the oven face plate by moving the upper hinge and lower hinge in the direction necessary for proper alignment.
2. Adjust so that the door has no play between the inner door surface and oven front surface. If the door assembly is not mounted properly, microwave energy may leak from the space between the door and oven.
3. Do the microwave leakage test.

4-5 Replacement of Heater-Swing Assembly

1. Remove 4 pieces of screws and strip off the cover-back.
2. Disassemble wire and supporter-bushing. (4 pieces of screws)
3. Take out net cercular and separate holder heater. (2 pieces of screws)
4. Separate motor-swing, m-s/w, heater L and R respectively.



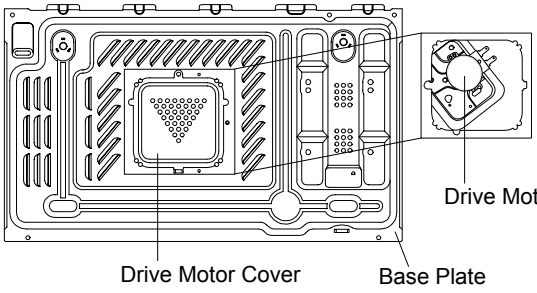


4-6 Replacement of Fuse

1. Disconnect the oven from the power source.
2. When 20A fuse blows out by the operation of interlock monitor switch failure, replace the primary interlock switch, door sensing switch, monitor switch and power relay.
3. When the above three switches operate properly, check if any other part such as the control circuit board, blower motor or high voltage transformer is defective.

4-5 Replacement of Drive Motor

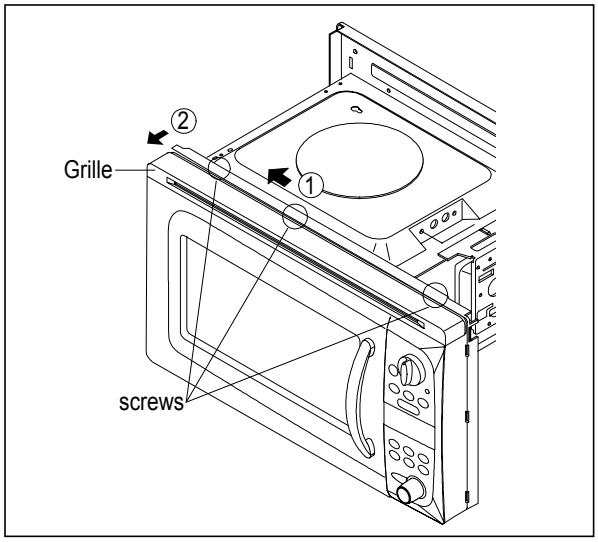
1. Take out the glass tray, guide roller and coupler from cavity.
2. Turn the oven upside down to replace the drive motor.
3. Cut the four corners of the drive motor cover.
4. Disconnect all the lead wires from the drive motor.
5. Remove screws securing the drive motor to the cavity.
6. Remove the drive motor.
7. When replacing the drive motor, be sure to remount it in the correct position.
8. Connect all the leads to the drive motor.
9. Screw the drive motor cover to the base plate with a screw driver.
10. Remount the coupler in the correct position.



4-8 Replacement of Control Circuit Board

4-8-1 Removal of Grille

1. Remove screws securing the Grille.
2. Push to the arrow direction and pull forward to take out.



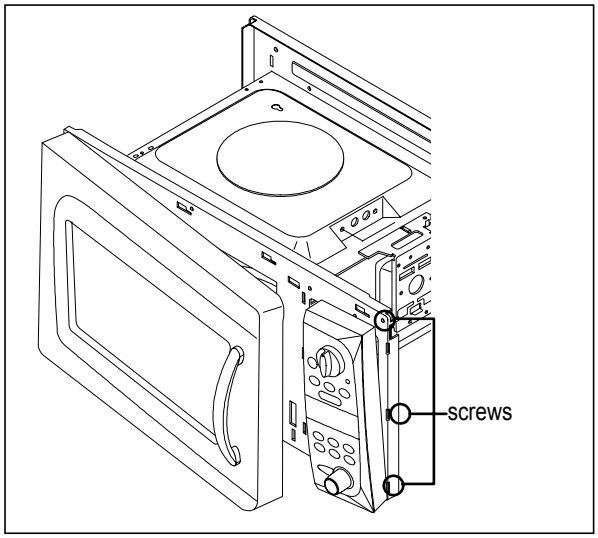
4-8-2 Removal of Control Box

1. Be sure to ground any static electric charge in your body and never touch the control circuit.

2. Disconnect the connectors from the control circuit board.

3. Remove screws securing the control box assembly.

4. Remove the screw securing the ground tail of the keyboard.



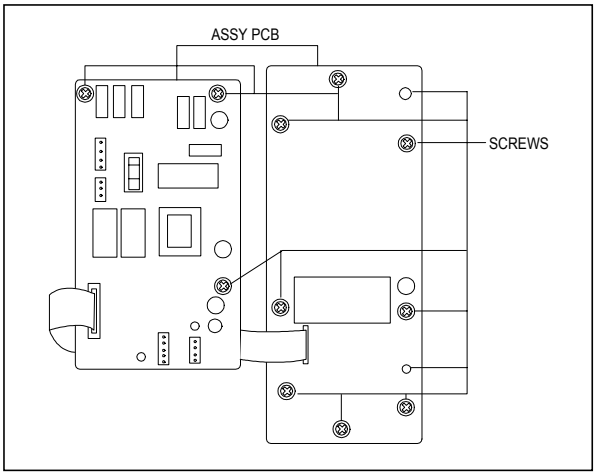
4-8-3 Removal of P.C.B Assembly

1. Pull the lever end of the plastic fastener and remove the Flexible Printed Circuit(FPC) of membrane panel.

2. Remove screws securing the control circuit board.

3. Lift up the control circuit board from the Ass'y control box.

4. When reconnecting the FPC connector, make sure that the holes on the connector are properly engaged with the hooks on the Plastic Fastener.



5. Alignment and Adjustments

PRECAUTION

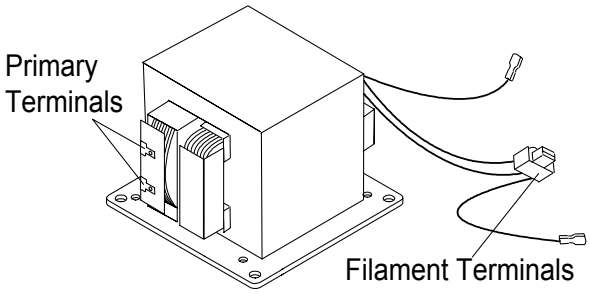
1. High voltage is present at the high voltage terminals during any cook cycle.
2. It is neither necessary nor advisable to attempt measurement of the high voltage.
3. Before touching any oven components or wiring, always unplug the oven from its power source and discharge the high voltage capacitor.

5-1 High Voltage Transformer

1. Remove connectors from the transformer terminals and check continuity.
2. Normal resistance readings are as follows:

Secondary	Approx. 148Ω
Filament	Approx. 0Ω
Primary	Approx. 0.5Ω

(Room temperature = 20°C)



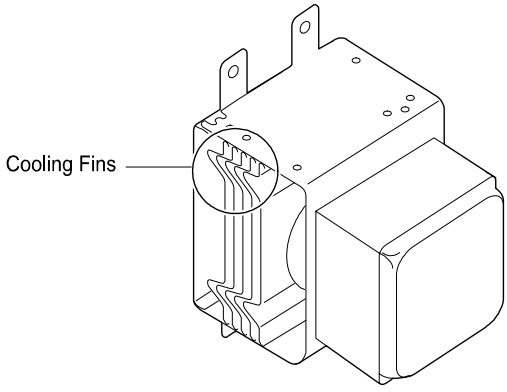
5-2 Low Voltage Transformer

1. The low voltage transformer is located on the control circuit board.
2. Remove the low voltage transformer from the PCB Ass'y and check continuity.
3. Normal resistor reading is shown in the table.

Terminals	Resistance
1~2(Input)	1089Ω
4~5(Output7V)	6.2Ω
7~8(Output17V)	17.2Ω

5-3 Magnetron

1. Continuity checks can indicate only an open filament or a shorted magnetron. To diagnose an open filament or shorted magnetron :
2. Isolate the magnetron from the circuit by disconnecting its leads.
3. A continuity check across the magnetron filament terminals should indicate one ohm or less.
4. A continuity check between each filament terminal and magnetron case should read open.



5-4 High Voltage Capacitor

1. Check continuity of the capacitor with the meter set at the highest resistance scale.
2. Once the capacitor is charged, a normal capacitor shows continuity for a short time, and then indicates 10MΩ.
3. A shorted capacitor will show continuous continuity.
4. An open capacitor will show constant 10MΩ.
5. Resistance between each terminal and chassis should read infinite.

5-5 High Voltage Diode

1. Isolate the diode from the circuit by disconnecting its leads.
2. With the ohm-meter set at the highest resistance scale, measure across the diode terminals. Reverse the meter leads and read the resistance. A meter with 6V, 9V or higher voltage batteries should be used to check the front-to back resistance of the diode (otherwise an infinite resistance may be read in both directions). The resistance of a normal diode will be infinite in one direction and several hundred MΩ in the other direction.

5-6 Main Relay and Power Control Relay

1. The relays are located on the PCB Ass'y. Isolate them from the main circuit by disconnecting the leads.
2. Operate the microwave oven with a water load in the oven. Set the power level set to high.
3. Check continuity between terminals of the relays after the start pad is pressed.

5-7 Adjustment of Primary Switch, Secondary Switch and Monitor Switch

Precaution

For continued protection against radiation hazard, replace parts in accordance with the wiring diagram and be sure to use the correct part number for the following switches: Primary and secondary interlock switches, and the interlock monitor switch (replace all together). Then follow the adjustment procedures below. After repair and adjustment, be sure to check the continuity of all interlock switches and the interlock monitor switch.

1. When mounting Primary switch and Interlock Monitor switch to Latch Body, consult the figure.

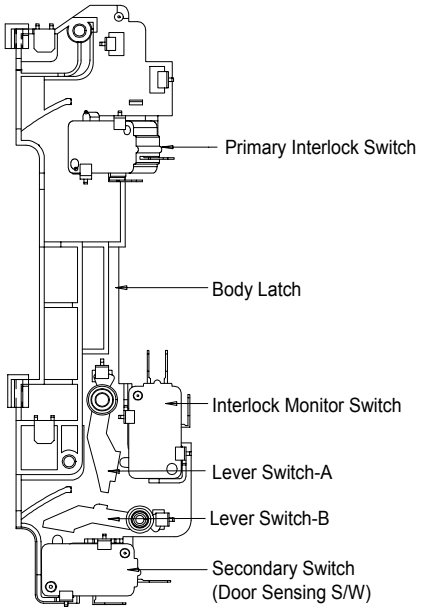
2. No specific adjustment during installation of Primary switch and Monitor switch to the latch body is necessary.

3. When mounting the Latch Body to the oven assembly, adjust the Latch Body by moving it so that the oven door will not have any play in it. Check for play in the door by pulling the door assembly. Make sure that the latch keys move smoothly after adjustment is completed. Completely tighten the screws holding the Latch Body to the oven assembly.

4. Reconnect to Monitor switch and check the continuity of the monitor circuit and all latch switches again by following the components test procedures.

5. Confirm that the gap between the switch housing and the switch actuator is no more than 0.5mm when door is closed.

6. **Interlock Switch Replacement** - When replacing faulty switches, be sure switch mounting tabs are not bent, broken or otherwise deficient in their ability to secure the switches in place.



	Door Open	Door Closed
Secondary switch	∞	0
Monitor switch (COM-NC)	0	∞
Monitor switch (COM-NO)	∞	0
Door Sensing S/W	∞	0

5-8 Output Power of Magnetron

CAUTION
MICROWAVE RADIATION
PERSONNEL SHOULD NOT ALLOW EXPOSURE TO MICROWAVE RADIATION FROM MICROWAVE GENERATOR OR OTHER PARTS CONDUCTING MICROWAVE ENERGY.

The output power of the magnetron can be measured by performing a water temperature rise test.
Equipment needed :
* Two 1-liter cylindrical borosilicate glass vessel (Outside diameter 190 mm)
* One glass thermometer with mercury column

NOTE : Check line voltage under load. Low voltage will lower the magnetron output. Make all temperature and time tests with accurate equipment.

1. Fill the one liter glass vessel with water.
2. Stir water in glass vessel with thermometer, and record glass vessel's temperature ("T1", 10±1°C).
3. After moving the water into another glass vessel, place it in the center of the cooking tray. Set the oven to high power and operate for 48seconds exactly. (3 seconds included as a holding time of magnetron oscillation:)
4. When heating is finished, stir the water again with the thermometer and measure the temperature ("T2").
5. Subtract T1 from T2. This will give you the water temperature rise. (△T)
6. The output power is obtained by the following formula;

$$\text{Output Power} = \frac{4.187 \times 1000 \times \triangle T + 0.55 \times Mc \times (T_2 - T_1)}{45}$$

48 : Heating Time (sec)
45 : Counting Time (sec)
4.187 : Coefficient for Water
1000 : Water (cc)
△T : Temperature Rise (T2-T1)
To : Room Temperature
Mc : Cylindrical borosilicate glass weight

7. Normal temperature rise for this model is 9°C to 11°C at 'HIGH'.
   NOTE 1 : Variations or errors in the test procedure will cause a variance in the temperature rise. Additional power test should be made if temperature rise is marginal.
   NOTE 2 : Output power in watts is computed by multiplying the temperature rise (step 5) by a factor of 91 times the of centigrade temperature.

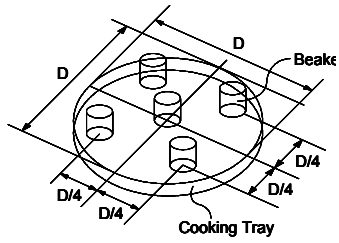
5-9 Microwave Heat Distribution - Heat Evenness

The microwave heat distribution can be checked indirectly by measuring the water temperature rise at certain positions in the oven:

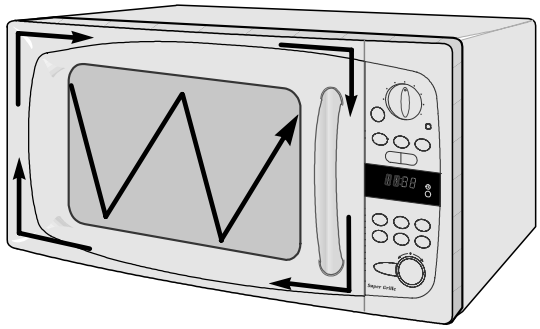
1. Prepare five beakers made of 'Pyrex', having 100 milliliters capacity each.
2. Measure exactly 100milliliters off water load with a measuring cylinder, and pour into each beaker.
3. Measure the temperature of each water load. (Readings shall be taken to the first place of decimals.)
4. Put each beaker in place on the cooking tray as illustrated in figure below. Start heating.
5. After heating for 2 minutes, measure the water temperature in each beaker.
6. Microwave heat distribution rate can be calculated as follows:

$$\text{Heat Distribution} = \frac{\text{Minimum Temperature Rise}}{\text{Maximum Temperature Rise}} \times 100(\%)$$

The result should exceed 65%.



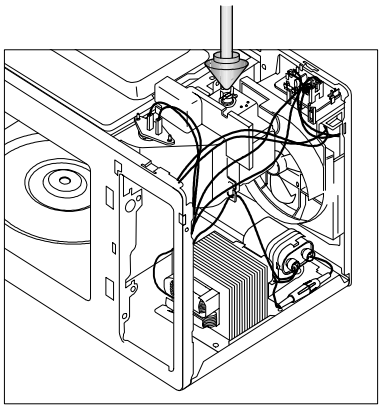
5-10 Procedure for Measurement of Microwave Energy Leakage



1) Pour 275±15cc of 20±5°C(68±9°F) water in a beaker which is graduated to 600cc, and place the beaker in the center of the oven.
2) Start to operate the oven and measure the leakage by using a microwave energy survey meter.
3) Set survey meter with dual ranges to 2,450MHz.
4) When measuring the leakage, always use the 2 inch spacer cone with the probe. Hold the probe perpendicular to the cabinet door. Place the spacer cone of the probe on the door and/or cabinet door seam and move along the seam, the door viewing window and the exhaust openings moving the probe in a clockwise direction at a rate of 1 inch/sec. If the leakage testing of the cabinet door seam is taken near a corner of the door, keep the probe perpendicular to the areas making sure that the probe end at the base of the cone does not get closer than 5cm to any metal. If it gets closer than 5cm, erroneous readings may result.
5) Measured leakage must be less than 4mW/cm^2, after repair or adjustment.

Maximum allowable leakage is 5mW/cm^2.
4mW/cm^2 is used to allow for measurement and meter accuracy.

5-11 Check for Microwave Leakage



1. Remove the outer panel.
2. Pour 275±15cc of 20±5°C(68±9°F) water in a beaker which is graduated to 600cc, and place the beaker in the center of the oven.
3. Start the oven at the highest power level.
4. Set survey meter dual ranges to 2,450MHz.
5. Using the survey meter and spacer cone as described above, measure arnear the opening of magnetron, the surface of the air guide and the surface of the wave guide as shown in the following photo.(but avoid the high voltage components.) The neading should be less than 4mW/cm^2.

5-12 Note on Measurement

1) Do not exceed the limited scale.
2) The test probe must be held on the grip of the handle, otherwise a false reading may result when the operator's hand is between the handle and the probe.
3) When high leakage is suspected, do not move the probe horizontally along the oven surface; this may cause damage to the probe.
4) Follow the recommendation of the manufacturer of the microwave energy survey meter.

5-13 Leakage Measuring Procedure

5-13-1 Record keeping and notification after measurement
1) After adjustment and repair of a radiarion preventing device, make a repair record for the measured values, and keep the data.
2) If the radiation leakage is more than 4 mW/cm $_2$ after determining that all parts are in good condition, functioning properly and the identical parts are replaced as listed in this manual notift that fact to ;

CENTRAL SERVICE CENTER

5-13-2 At least once a year have the microwave energy survey meter checked for accuracy by its manufacturer.

6. Troubleshooting

PRECAUTION

1. CHECK GROUNDING BEFORE CHECKING FOR TROUBLE.
2. BE CAREFUL OF THE HIGH VOLTAGE CIRCUIT.
3. DISCHARGE THE HIGH VOLTAGE CAPACITOR.
4. WHEN CHECKING THE CONTINUITY OF THE SWITCHES OR TRANSFORMER, DISCONNECT ONE LEAD WIRE FROM THESE PARTS AND THEN CHECK CONTINUITY WITHOUT THE POWER SOURCE ON. TO DO OTHERWISE MAY RESULT IN A FALSE READING OR DAMAGE TO YOUR METER.
5. DO NOT TOUCH ANY PART OF THE CIRCUIT OR THE CONTROL CIRCUIT BOARD, SINCE STATIC DISCHARGE MAY DAMAGE IT.
   ALWAYS TOUCH GROUND WHILE WORKING ON IT TO DISCHARGE ANY STATIC CHARGE BUILT UP.

6-1 Electrical Malfunction

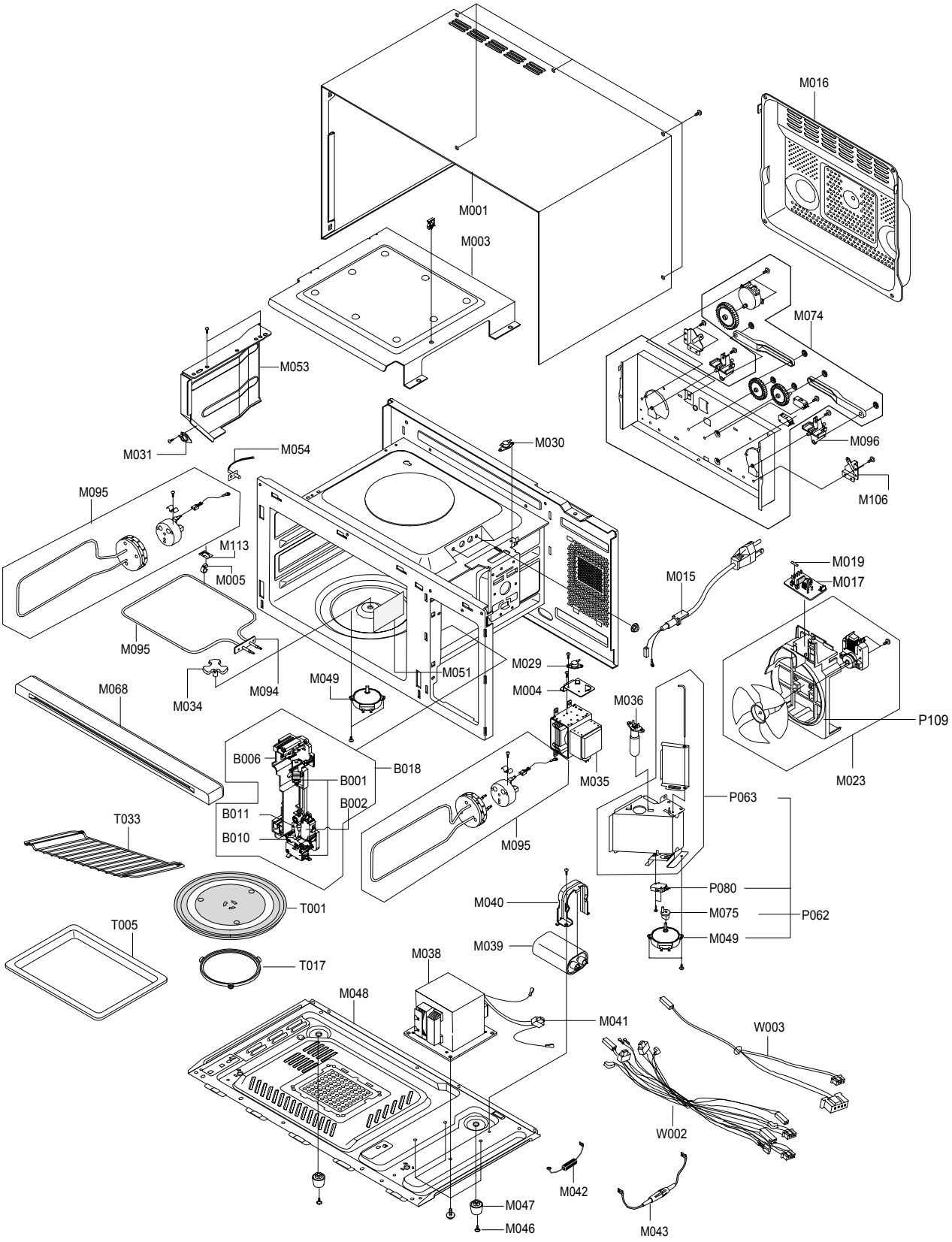
SYMPTOM	CAUSE	CORRECTIONS
Oven is dead. Fuse is OK. No display and no operation at all.	1. Open or loose lead wire harness 2. Open thermal cutout (Magnetron or Cavity) 3. Open low voltage transformer 4. Defective Ass'y PCB	Check fan motor when thermal cutout is defective. Check Ass'y PCB when L.V.T. is defective.
No display and no operation at all. Fuse is blown.	1. Shorted lead wire harness 2. Defective primary latch switch (NOTE 1) 3. Defective monitor switch (NOTE1) 4. Shorted H.V.Capacitor 5. Shorted H.V.Transformer (NOTE2)	Check adjustment of primary, interlock monitor, power relay, door sensing switch.
	NOTE 1: All of these switches must be replaced at the same time. (refer to adjustment instructions) Check continuity of power relay contacts and if it has continuity, replace power relay also. NOTE 2: When H.V.Transformer is replaced, check diode and magnetron also.	
Oven does not accept key input (Program)	1. Key input is not in-Sequence 2. Open or loose connection of membrane key pad to Ass'y PCB 3. Shorted or open membrane panel 4. Defective Ass'y PCB	Refer to operation procedure. Replace PCB main.
Timer starts countdown but no microwave oscillation. (No heat while oven lamp and fan motor turn on.)	1. Off-alignment of latch switches 2. Open or loose connection of high voltage circuit especially magnetron filament circuit NOTE: Large contact resistance will bring lower magnetron filament voltage and cause magnetron to lower output and/or intermittent oscillation. 3. Defective high voltage components H.V.Transformer H.V. Capacitor H.V.Diode, Magnetron 4. Open or loose wiring of power relay 5. Defective primary latch switch 6. Defective power relay or Ass'y PCB	Adjust door and latch switches. Check high voltage component according to component test procedure and replace if it is defective. Replace PCB main.

6-1 Electrical Malfunction (continued)

SYMPTOM	CAUSE	CORRECTIONS
Oven lamp and fan motor turn on	1. Misadjustment or loose wiring of primary latch switch 2. Defective primary latch switch	Adjust door and latch switches.
Oven can program but timer does not start.	1. Open or loose wiring of secondary interlock switch 2. Off-alignment of primary interlock 3. Defective secondary interlock S/W	Adjust door and interlock switches.
Microwave output is low;. Oven takes longer time to cook food.	1. Decrease in power source voltage. 2. Open or loose wiring of magnetron filament circuit. (Intermittent oscillation)) 3. Aging of magnetron	Consult electrician.
Fan motor turns on when plugged in	Loose wiring of door sensing switch	Check wire of door sensing switch.
Oven does not operate and return to the plugged in mode.	Defective Ass'y PCB	Replace PCB main.
Loud buzzing noise can be heard.	1. Loose fan and fan motor 2. Loose screws on H.V.Transformer 3. Shorted H.V.Diode	Tighten screws of fan motor. Tighten screws of H.V.Transformer. Replace H.V.Diode.
Turntable motor does not rotate.	1. Open or loose wiring of turntable motor. 2. Defective turntable motor.	Replace turntable motor.
Oven stops operation during cooking	1. Open or loose wiring of primary interlock switch 2. Operation of thermal cutout(Magnetron)	Adjust door and latch switches.
Sparks	1. Metallic ware or cooking dishes touching on the oven wall. 2. Ceramic ware trimmed with gold or silver powder also causes sparks.	Inform the customer. Do not use any type of cookware with metallic trimming.
Uneven cooking	Uneven intensity of microwave due to its characteristics.	Wrap thinner parts of the food with aluminum foil. Use plastic wrap or cover with a lid. Stir once or twice while cooking foods such as soup, cocoa, or milk.
Noise from the turntable motor when it starts to operate.	Noise may result from the motor.	Replace turntable motor.

7. Exploded Views and Parts List

7-1 Exploded Views

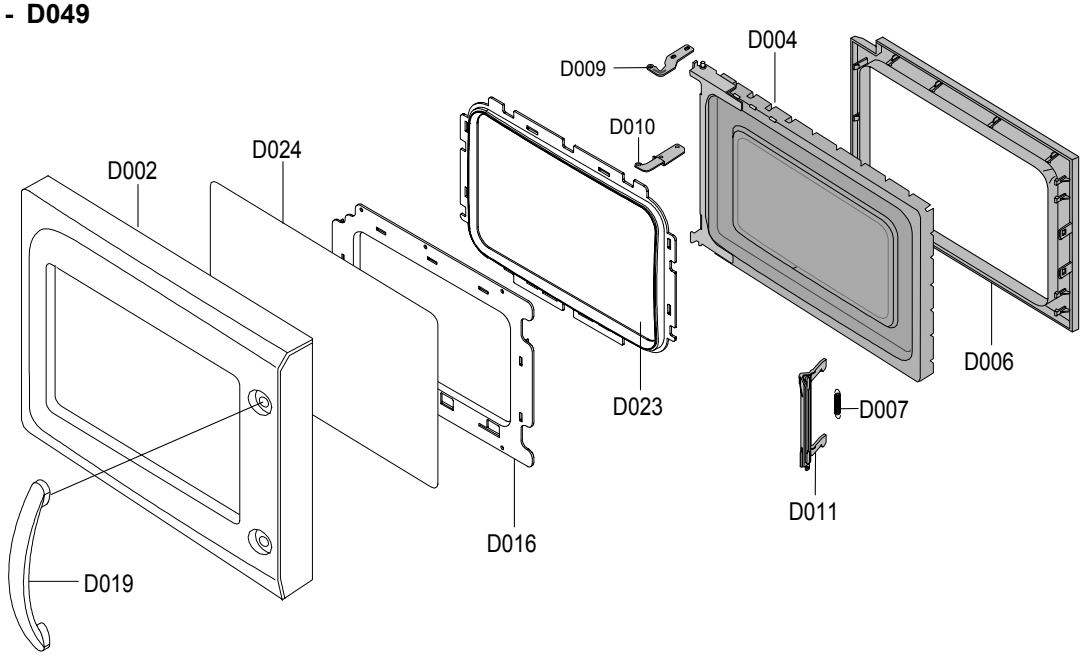


7-2 Main Parts List

No.	Code No.	Description	Specification	Q'ty	Remark
B001	3405-001034	SWITCH-MICRO	125/250VAC,16A,200GF,SPST-N	1	DOOR
B002	3405-001032	SWITCH-MICRO	125/250VAC,16A,200GF,SPDT	1	
B006	DE72-00137B	LATCH-BODY	PG113R,NYLON,WHT,-,-,-,-,-	1	
B010	DE66-00093B	LEVER-SWITCH(A)	PG113R,NYLON,NTR,HANDLE,	1	
B011	DE66-00094B	LEVER-SWITCH(B)	PG113R,NYLON,NTR,HANDLE,	1	
B018	DE96-00120H	ASSY BODY LATCH	PG113R(TBMO/SIDE),NYLON	1	
M001	DE64-00483E	PANEL-OUTER	MT1066SB,C/STEEL,T0.5,-,-,-	1	
M003	DE61-00290A	BRACKET-UPPER	TBMO,SECC,T0.6,-,-,-,TOAST	1	
M004	DE61-50490A	BRACKET-TCO	-,SECC1,T0.6,34,58,-,-	1	
M005	DE61-70060A	SPRING-PLATE	-,SK-5,T0.5,-,-,-,-,-,-,-	1	
M015	DE39-00022B	ASSY POWER CORD	4819D,CK135,230V50Hz,-,-	1	
M016	DE63-00131A	COVER-BACK	MT1044WB/XAA,SECD ,T0.5,-,-,-	1	
M017	DE96-00011A	ASSY NOISE FILTER	SN-3WUA,250V15A,3W 15A	1	
M019	3601-001197	FUSE-CARTRIDGE	250V,15A,SLOW-BLOW,CERAMI	1	
M023	DE31-00001D	MOTOR FAN	-,SMF-2D3EA,230V50Hz,-,M1D33CE	1	
M029	DE47-20009A	THERMOSTAT	PW2N-520PB,160/60,250V/7.5A,H	1	GUIDE-AIR
M030	DE47-20009A	THERMOSTAT	PW2N-520PB,160/60,250V/7.5A,H	1	
M031	DE47-00003A	THERMOSTAT	PW2N,-,-,-,120/110,-,-,-,187,	1	GRILL
M034	DE67-00015A	COUPLER	PTFE,-,12G,WHT,MW5896W,-	1	
M035	OM75P(31)ERHN	ASSY-MAGNETRON	OM75P(31)ERHN	1	
M036	4713-001046	LAMP-INCANDESCENT	240V,104mA,25W,ORG,-,- EA	1	
M038	DE26-00080B	TRANS H.V	SHV-EURO2,230V,50HZ,2340V/3.5V	1	
M039	2501-001015	C-OIL	1.0uF,2100V,BK,35X54X80,20mm	1	
M040	DE61-50106A	BRACKET-HVC	-,SECC,T0.8,W31,L125.8,-,-	1	
M041	DE91-70063A	ASSY-HVD	V2M6,PI9.0,0.05MT,-,-	1	
M042	DE59-00002A	DIODE-H.V	ESJC13-12B,12KV,-,-,-,MWO ALL,	1	
M043	DE91-70061A	ASSY-H.V.FUSE	THV060T-0800-H,5KV/0.80A,W	1	
M046	DE60-60025A	PIN-FOOT	PP-JI350,BLK,-,-,-,-,-,-	2	
M047	DE61-40065A	FOOT	-,PP,T2x22x17mm,BLK,-,-,-	2	
M048	DE61-00279A	BASE-PLATE	TBMO,SGCD ,T0.6,-,-,-,TOAST/B	1	
M049	DE31-10098A	MOTOR SYNCHRONOUS	M2LB24ZR92,220/240V,50	1	
M051	DE63-00102A	COVER-CEILING	TBMO,MICA SHEET,T0.3,W110,	1	
M053	DE97-00314A	ASSY-GUIDE AIR	MT1044WB,TCO 160/60,-,-	1	
M054	DE32-10013A	SENSOR THERMISTOR	PT-312-K2,-,-,-,-,-,-	1	
M058	DE65-20014A	CABLE CLAMP	-,-,-,NY-66,-,DA-6N	1	
M068	DE64-00676C	GRILLE	PG117-S/XEC,PC,-,-,-,-,SIL,SIDE	1	
M074	DE97-00298B	ASSY-SWING MOTOR	PG113U,SWING-HEATER,230	1	
M075	DE66-00116A	CAM-MOTOR	TBMO,POM,-,-,-,-,-,-,TOAST/BAK	1	
M094	DE63-00048A	GASKET-STOPPER	CE2613N,SECC,T1.0,W53,L15	1	
M095	DE47-00025B	HEATER	SHG-E3000A,-,-,850W,-,230V,60OHM,	1	
M095	DE47-00026B	HEATER	SHG-E3000B,-,-,450W,-,230V,114OHM	1	
M095	DE47-00027B	HEATER	SHG-E3000C,-,-,450W,-,230V,114OHM	1	
M096	DE61-00297A	HOLDER-HEATER	TBMO,PPS,-,-,-,BRN,TOAST/B	2	
M106	DE61-00291A	SUPPORT-BUSHING	TBMO,SECC,T0.8,-,-,-,TOA	2	
M113	DE61-00324A	SUPPORT-HEATER	TBMO,ALUMINA,-,-,-,-,TOAS	1	
P062	DE97-00299B	ASSY-DAMPER	PG113U,TBMO,DAMPER,230V50HZ	1	
P063	DE97-00111A	ASSY-DAMPER SUB	MC5694W,-,-,-,-,-	1	
P080	3405-001034	SWITCH-MICRO	125/250VAC,16A,200GF,SPST-N	1	
T001	DE74-20015G	TRAY-COOKING	3RD-1.0,T6,1115G,HKS,-,-,-	1	
T005	DE97-00327A	ASSY-TRAY BAKING	MT1044WB,-,-,-	1	
T017	DE92-90189S	ASSY-GUIDE ROLLER	JES831,SPS(C832-V0),D1	1	
T033	DE97-00318B	ASSY-WIRE RACK	MT1044WB,-,-,-	1	
W002	DE96-00243A	ASSY-WIRE HARNESS-A	PG113R,230V50HZ	1	
W003	DE39-00344A	WIRE HARNESS-B	BT3000B,120V,-,-,-,-,-,-	1	
W004	DE96-00217A	ASSY-WIRE HARNESS-C	MT1044WB/XAA,120V60H	2	

7-3 Control & Door Parts List (S.N.A : SERVICE NOT AVAILABLE)

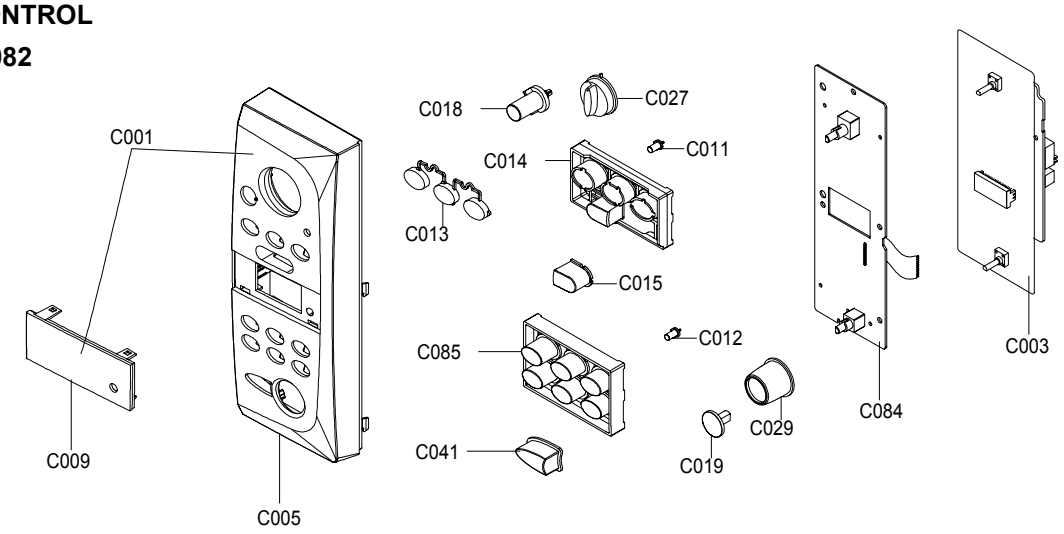
ASSY DOOR - D049



No.	Code No.	Description	Specification	Q'ty	Remark
D002	DE64-00672C	DOOR-A	PG117-S/XEC,PC,-,-,-,-,SIL,SIDE	1	
D004	DE94-00810A	ASSY DOOR-E	PG113R,SELANT(COATING/GLASS)	1	
D006	DE64-00692A	DOOR-C	TBMO-EURO,PBT,-,-,-,-,-,SIDE/HAND	1	
D007	DE61-00193A	SPRING-KEY	MW1255,HSWR,PI0.6,-,D5.5,L19,	1	
D009	DE61-00371A	HINGE-UPPER	TBMO-EURO,SCP1,T2.0,-,-,-,-	1	
D010	DE61-00372A	HINGE-LOWER	TBMO-EURO,SCP1,T2.0,-,-,-,-	1	
D011	DE64-00690A	KEY-DOOR	TBMO-EURO,NYLON#66,-,-,BLK,-,SI	1	
D016	DE64-00673A	DOOR-SUB	TBMO-EURO,PBT,-,-,-,-,BLK,SIDE	1	
D019	DE64-00675C	HANDLE	PG117-S/XEC,PC,-,-,-,-,SIL,SIDE EA	1	
D023	DE64-00674A	DOOR-COVER	TBMO-EURO,PC,SILVER COATING,-	1	
D024	DE64-00769A	SCREEN-DOOR(B)	PG113R,TEMP-GLASS,T3.2,W3	1	
D049	-	ASSY DOOR	PG117-S/XEC,SIL,SIDE	1	S.N.A

7-4 Control (S.N.A : SERVICE NOT AVAILABLE)

ASSY CONTROL
BOX - C082



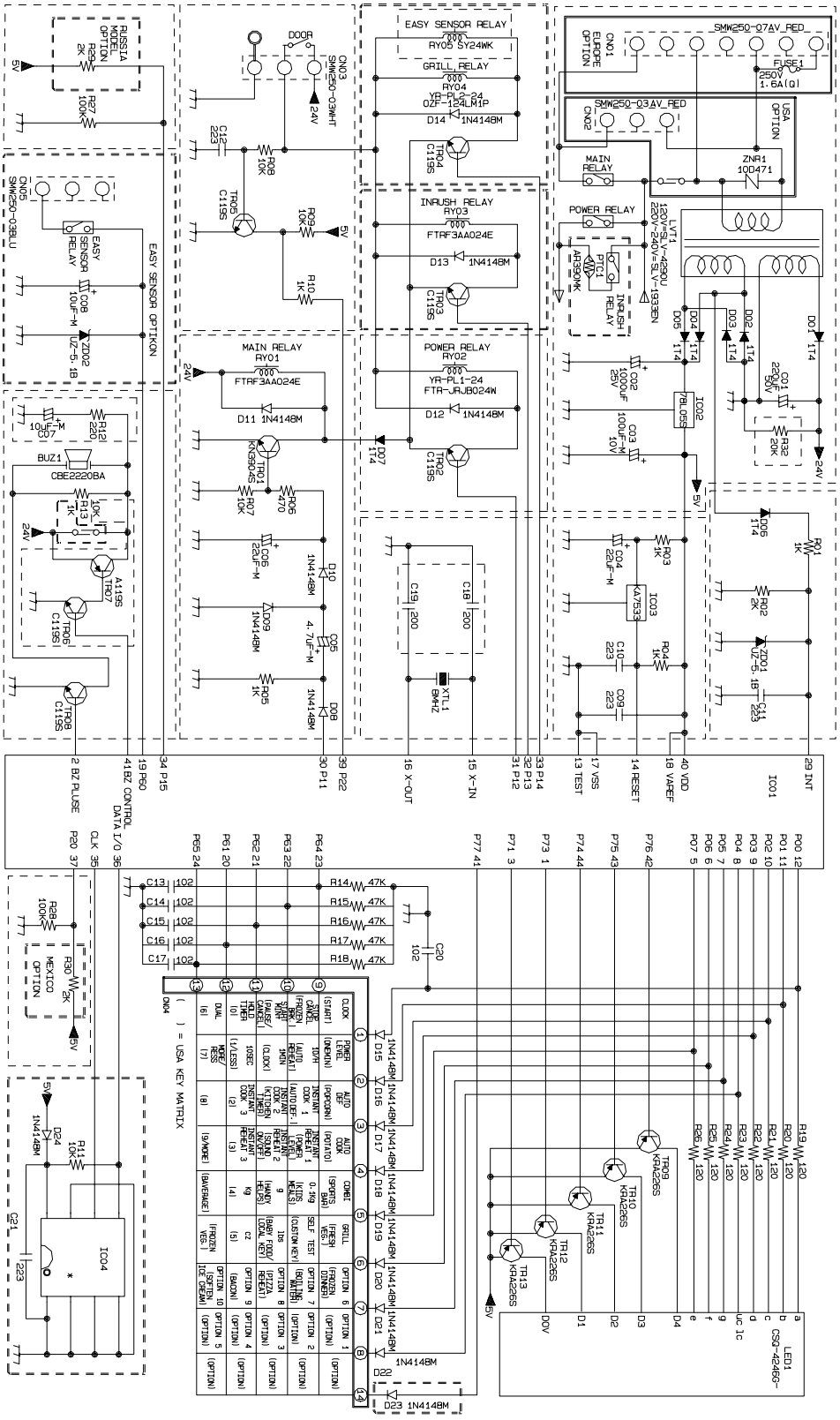
No.	Code No.	Description	Specification	Q'ty	Remark
C001	DE94-00842D	ASSY CONTROL-PANEL	-,PG117-S/XEC,SIL,SID	1	
C003	RC-TBMO2-01	ASSY PCB PARTS	PG117R(TACT),220V50HZ	1	
C005	DE64-00677D	CONTROL-PANEL	PG117-S/XEC,PC,-,-,-,-,SIL	1	
C009	DE64-00689A	WINDOW-DISPLAY	TBMO-EURO,SAN,SIDE(TACT),	1	
C011	DE64-00681D	BUTTON-SELECT(A)	PG117-S/XEC,PC,-,-,SIL,	1	
C012	DE64-00682C	BUTTON-SELECT(B)	PG117-S/XEC,PC,-,-,SIL,	1	
C013	DE64-00683C	BUTTON-SELECT(C)	PG117-S/XEC,PC,TRANSPAR	1	
C014	DE64-00684C	BUTTON-SELECT(D)	PG117-S/XEC,PC,-,-,SIL,	1	
C015	DE64-00685C	BUTTON-SELECT(E)	PG117-S/XEC,PC,-,-,SIL,	1	
C018	DE64-00718A	BUTTON-SELECT(F)	TBMO-EURO,PC,BLK,SIDE,-	1	
C019	DE64-00688D	BUTTON-START	PG117-S/XEC,PC,-,-,SIL,-	1	
C027	DE64-00679D	KNOB-POWER	PG117-S/XEC,PC,-,-,-,-,SIL,-,	1	
C029	DE64-00680C	KNOB-DIAL	PG117-S/XEC,PC,-,-,-,-,SIL,-,S	1	
C041	DE64-00686C	BUTTON-CANCEL	PG117-S/XEC,PC,-,-,SIL,-	1	
C082	-	ASSY CONTROL-BOX	-,PG117-S/XEC,SIL,SIDE	1	S.N.A
C084	DE96-00247A	ASSY-KEY MODULE	PG117R,KEY-MODULE	1	
C085	DE64-00719D	BUTTON-SELECT(G)	PG117-S/XEC,PC,-,-,SIL,	1	

7-5 Standard Parts List

Code No.	Description	Specification	Q'ty	Remark
DE60-20063A	BOLT-FLANGE	M4,10,ZPC3,YEL,MSWR,-,-,-,-	2	SLIDER-L
DE60-20063A	BOLT-FLANGE	M4,10,ZPC3,YEL,MSWR,-,-,-,-	2	SLIDER-R
6021-001130	NUT-CIRCULAR	SPN-4,ID3.9,OD12,BLK,SK-5,H1.4,T0.3	2	-
6021-001130	NUT-CIRCULAR	SPN-4,ID3.9,OD12,BLK,SK-5,H1.4,T0.3	4	-
DE60-30016A	NUT-FLANGE	M4,MSWR10,-,-,-,-,-,-,-	2	HEATER
DE60-30016A	NUT-FLANGE	M4,MSWR10,-,-,-,-,-,-,-	1	THER
DE60-10082H	SCREW-A	-,-,-,-,2S-4X12,TOOTHED,-,-,-,-	2	B-PLATE
DE60-10082H	SCREW-A	-,-,-,-,2S-4X12,TOOTHED,-,-,-,-	1	B/LATCH-R
DE60-10082H	SCREW-A	-,-,-,-,2S-4X12,TOOTHED,-,-,-,-	4	BKT-UP
DE60-10082H	SCREW-A	-,-,-,-,2S-4X12,TOOTHED,-,-,-,-	4	BUSHING
DE60-10082H	SCREW-A	-,-,-,-,2S-4X12,TOOTHED,-,-,-,-	2	CO-BACK
DE60-10082H	SCREW-A	-,-,-,-,2S-4X12,TOOTHED,-,-,-,-	2	CON-BOX
DE60-10082H	SCREW-A	-,-,-,-,2S-4X12,TOOTHED,-,-,-,-	2	CV/AIR
DE60-10082H	SCREW-A	-,-,-,-,2S-4X12,TOOTHED,-,-,-,-	4	DECO-FOOT
DE60-10082H	SCREW-A	-,-,-,-,2S-4X12,TOOTHED,-,-,-,-	1	FAN-MO
DE60-10082H	SCREW-A	-,-,-,-,2S-4X12,TOOTHED,-,-,-,-	3	GRILL
DE60-10082H	SCREW-A	-,-,-,-,2S-4X12,TOOTHED,-,-,-,-	5	PN/OUT
DE60-10082H	SCREW-A	-,-,-,-,2S-4X12,TOOTHED,-,-,-,-	2	SWING-MO
DE60-10082H	SCREW-A	-,-,-,-,2S-4X12,TOOTHED,-,-,-,-	1	TCO
DE60-10082H	SCREW-A	-,-,-,-,2S-4X12,TOOTHED,-,-,-,-	2	-
DE60-10082H	SCREW-A	-,-,-,-,2S-4X12,TOOTHED,-,-,-,-	1	-
DE60-10098A	SCREW-ASSY TAP TITE	-,GLD,SWRCH18A,ZPC2,PH,TC,-,M4X8,WT,-	1	CO-BACK-IN
DE60-10098A	SCREW-ASSY TAP TITE	-,GLD,SWRCH18A,ZPC2,PH,TC,-,M4X8,WT,-	1	M/DRIV
DE60-10098A	SCREW-ASSY TAP TITE	-,GLD,SWRCH18A,ZPC2,PH,TC,-,M4X8,WT,-	1	-
DE60-10098A	SCREW-ASSY TAP TITE	-,GLD,SWRCH18A,ZPC2,PH,TC,-,M4X8,WT,-	1	HVD
DE60-10098A	SCREW-ASSY TAP TITE	-,GLD,SWRCH18A,ZPC2,PH,TC,-,M4X8,WT,-	2	-
DE60-10098A	SCREW-ASSY TAP TITE	-,GLD,SWRCH18A,ZPC2,PH,TC,-,M4X8,WT,-	1	-
6009-001297	SCREW-SPECIAL	TH,+,-,M4,L15(6),ZPC(YEL),SWRCH	1	-
DE60-10195A	SCREW-STAR POLE	-,SWCH18A,4,12,TH,*,-,2,ZNC,-	1	A/GUIDE
DE60-10195A	SCREW-STAR POLE	-,SWCH18A,4,12,TH,*,-,2,ZNC,-	1	CLAMP
DE60-10195A	SCREW-STAR POLE	-,SWCH18A,4,12,TH,*,-,2,ZNC,-	2	CO-BACK
DE60-10045A	SCREW-TAP PH	-,-,FEFZY,-,PH,M3,-,L6,-,-	1	ASSY-TCO
DE60-10045A	SCREW-TAP PH	-,-,FEFZY,-,PH,M3,-,L6,-,-	1	-
DE60-10088A	SCREW-TAP PH	-,-,FEFZY,PLAIN,PH,M3,-,L8,-,-	3	PCB
DE60-10047A	SCREW-TAP PH	-,-,FEFZY,-,PH,M3,-,L16,-,-	2	-
DE60-10047A	SCREW-TAP PH	-,-,FEFZY,-,PH,M3,-,L16,-,-	2	-
DE60-10047A	SCREW-TAP PH	-,-,FEFZY,-,PH,M3,-,L16,-,-	2	-
DE60-10012A	SCREW-TAP TITE	-,SWR10,M4,L10,TH,+,-,3,ZPC2,-	1	CON-BOX-E
DE60-10012A	SCREW-TAP TITE	-,SWR10,M4,L10,TH,+,-,3,ZPC2,-	1	P-CORD
DE60-10012A	SCREW-TAP TITE	-,SWR10,M4,L10,TH,+,-,3,ZPC2,-	1	-
6003-000333	SCREW-TAPTITE	RH,+,2S,M3,L10,ZPC(YEL),SWRCH1	2	H/HEAT
DE60-10080B	SCREW-WASHER	-,2S,SWRCH18A,ZP2,PH,PI5,-,L10,-,-	1	BO/LAT-L
DE60-10080B	SCREW-WASHER	-,2S,SWRCH18A,ZP2,PH,PI5,-,L10,-,-	4	HVT
DE60-10080B	SCREW-WASHER	-,2S,SWRCH18A,ZP2,PH,PI5,-,L10,-,-	4	MGT

8. P.C.B Diagrams

8-1 P.C.B Diagrams (This Document can not be used without Samsung's authorization)



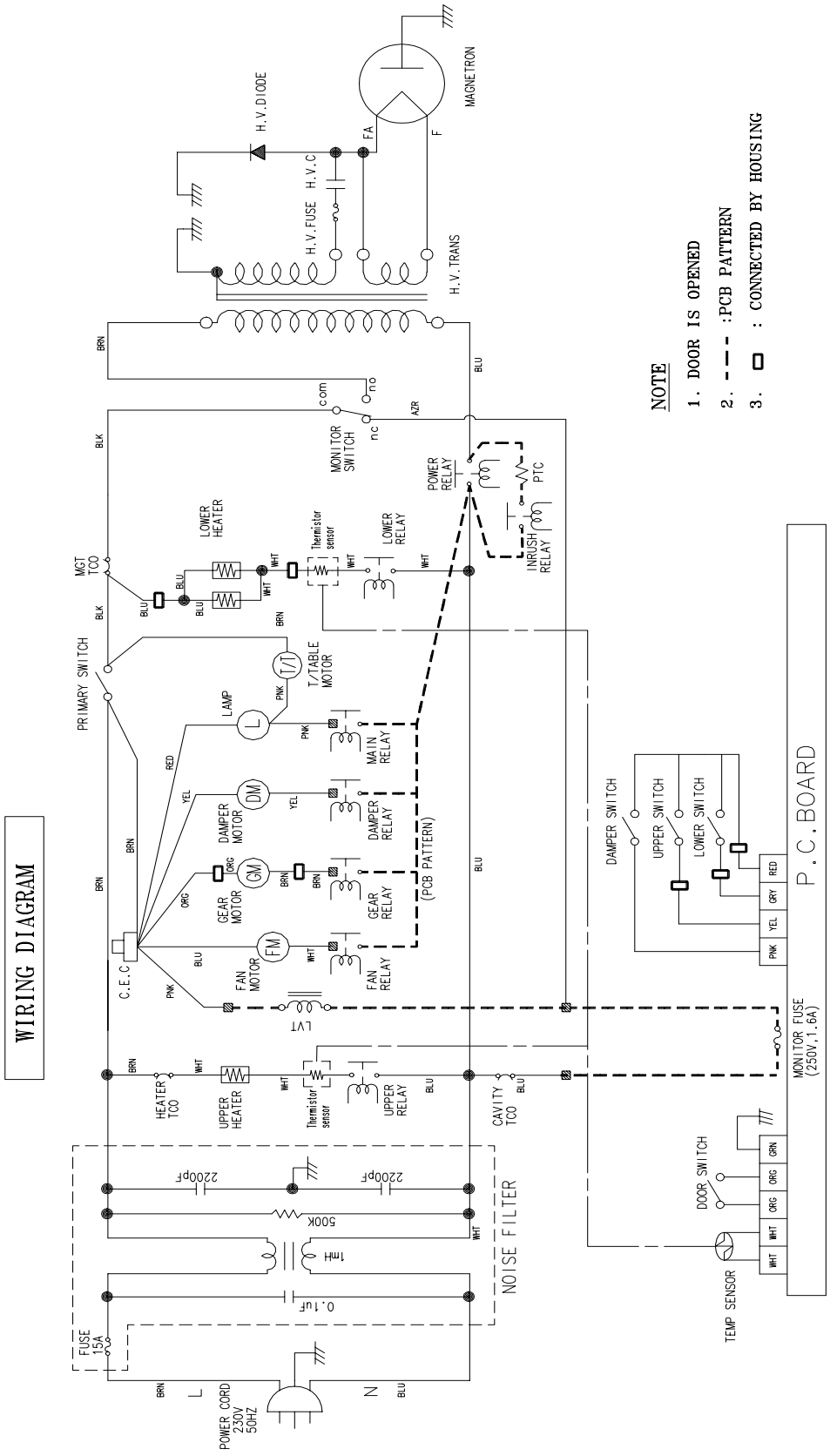
N2LED1
SCHEMATIC

8-2 P.C.B Parts List

Code No.	Description	Specification	Q'ty	Remark
3501-001062	RELAY-POWER	24VDC,523.2mW,16A,1FormA,15mS,	1	RY03
3501-001068	RELAY-POWER	24Vdc,523mW,16A,1FormA,15mS,10	2	RY07,RY08
3501-001155	RELAY-MINIATURE	24VDC,200MW,3000MA,1FORMA,10MS,10MS	5	RY01,RY02,RY04,RY05,RY06
3601-001126	FUSE-CARTRIDGE	250V,1.6A,FAST-ACTING,CERAMIC,5x20mm	1	FUSE
3708-001551	CONNECTOR-FPC/FFC/PIC	14P,1.25mm,STRAIGHT,SN	1	CN04
DE07-00037T	LED DISPLAY	CSE-4246G-18,TBMO(RUSSIA),-,40SEG,	1	LED1
DE09-00054A	IC MICOM	TPM87CH47U,OTP-16K,QFP,-,-,-	1	IC01
DE26-00078A	TRANS-L.V	SLV-C100,230V,50HZ,AC17.0V/6.8V,	1	LVT1
DE30-20016A	BUZZER	CBE2220BA,STICK,-,-,-,-,-,-,-	1	BUZ1
DE34-00040A	SWITCH-ENCODER	28VDC,10mA,8-STEP,-,JES1408G	1	ECD1
DE47-40024A	HOLDER-FUSE	FH-51H,7.5A,-,-,-,-,-	1	FUSE
0401-001083	DIODE-SWITCHING	MM4148,100V,150MA,LL-34,TP	20	D04~D23
0402-001298	DIODE-BRIDGE	DF06S,600V,1A,SMD-4,TP	1	BD01
0403-001288	DIODE-ZENER	ZMM55C5V1,4.8-5.4V,500MW,LL-34,TP	1	ZD01
0501-000465	TR-SMALL SIGNAL	MMBT3904,NPN,350MW,SOT-23,TP,30-300	1	TR01
0504-001080	TR-DIGITAL	KRC246S,NPN,200mW,2.2K/10K,SOT-23,TP	9	TR02~TR10
1202-000141	IC-VOLTAGE COMP.	7033,SOT-89,3P,-,SINGLE,0V,-,P	1	IC03
1203-001037	IC-VOLTAGE REGULATOR	78L05,SOT-89,3P,185MIL,PLASTIC	1	IC02
1404-000230	THERMISTOR-PTC	27ohm,20%,-,265V,1.5A,360mA,BK	1	PTC1
2007-000033	R-CHIP	0OHM,5%,1/8W,DA,TP,3216	12	J01~J11,OJ03
2007-000277	R-CHIP	100KOHM,1%,1/10W,DA,TP,2012	1	R13
2007-000300	R-CHIP	10KOHM,5%,1/10W,DA,TP,2012	6	R07,R08,R09,R16,R17,R18
2007-000468	R-CHIP	1KOHM,5%,1/10W,DA,TP,2012	7	R01,R03~R05,R10,R14,R15
2007-000468	R-CHIP	1KOHM,5%,1/10W,DA,TP,2012	7	R24~R31
2007-000671	R-CHIP	2KOHM,5%,1/10W,DA,TP,2012	2	R02,R11
2007-000868	R-CHIP	4.7KOHM,1%,1/10W,DA,TP,2012	1	R12
2007-000931	R-CHIP	470OHM,5%,1/10W,DA,TP,2012	1	R06
2007-000941	R-CHIP	47KOHM,5%,1/10W,DA,TP,2012	5	R19~R23
2203-000444	C-CERAMIC,CHIP	1nF,10%,50V,X7R,TP,2012,-	5	C12~C16
2203-000555	C-CERAMIC,CHIP	0.02nF,5%,50V,NP0,TP,2012	2	C17,C18
2203-001608	C-CERAMIC,CHIP	22nF,+80-20%,50V,Y5V,TP,2012	4	C08~C11
2401-000151	C-AL	1000uF,20%,25V,GP,TP,10x20,5	1	C02
2401-000244	C-AL	100uF,20%,10V,GP,TP,6.3x7,5	1	C03
2401-000598	C-AL	1uF,20%,50V,GP,TP,4x7,5	1	C07
2401-000911	C-AL	22uF,20%,16V,GP,TP,5x7,5	2	C04,C06
2401-001428	C-AL	470uF,20%,50V,GP,TP,10x20,5	1	C01
2401-002075	C-AL	4.7uF,20%,50V,GP,TP,5x11,5	1	C05
2801-003933	CRYSTAL-UNIT	8MHz,50ppm,28-AAA,12pF,70ohm,TP	1	XTL1
3711-000940	CONNECTOR-HEADER	BOX,4P,1R,2.5mm,STRAIGHT,SN	1	CN03
3711-000999	CONNECTOR-HEADER	BOX,5P,1R,2.5mm,STRAIGHT,SN	1	CN02
3711-004142	CONNECTOR-HEADER	BOX,3P/5P,1R,5mm/2.5mm,STRAIGH	1	CN06
3711-004200	CONNECTOR-HEADER	BOX,5P/7P,1R,2.5MM,STRAIGHT,SN	1	CN07
DE60-60012A	PIN-EYELET	ID2.1,OD2.5,L3.0,SN,BSP,T0.25,	2	-

9. Schematic Diagrams

9-1 Schematic Diagrams (This Document can not be used without Samsung's authorization)



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Printed in Korea
Code No. : DE68-03202A